

WHAT IS CLAIMED IS:

1. An insulation system for an oil filled environment comprising:
a plurality of insulating units, each of said plurality of insulating units comprising a first layer of insulating material and a second layer of insulating material;
at least one of said first and second layers comprising a polymeric material, said insulating units positioned with respect to each other such that said second layer of one insulating unit is adjacent to said first layer of another insulating unit.
2. The system of claim 1, wherein said polymeric material is selected from the group consisting of: polyethylene terephthalate (PET), surface treated polyethylene terephthalate (S-PET), QUIN-T, QUIN-TEK, polypropylene, polyethylene, polyethylene naphthalate (PEN), polysulphones, polystyrene, polyimides, polyphenylene sulphide (PPS), polybutylene terephthalate (PBT), polyamide imide (PAI), polyether imide (PEI) and any combinations thereof.
3. The system of claim 1, wherein said plurality of insulating units terminates at a terminal layer, said terminal layer having thereon a third layer of a paper insulating material.
4. The system of claim 1, wherein said first layer and said second layer each have a thickness from about 0.5 mil to about 20 mil.
5. The system of claim 1, wherein said first layer comprises a paper insulating material, and wherein said second layer comprises said polymeric material.
6. The system of claim 1, wherein said first layer has a first thickness and said second layer has a second thickness, a ratio of said second thickness to said first thickness is from about 0.75:1.25 to about 1.25:0.75.

7. The system of claim 1, wherein the system is selected from the group consisting of main insulation, layer insulation, and any combinations thereof.
8. The system of claim 1, wherein said plurality of insulating units is formed of a winding of said first and second layers.
9. An oil filled electric device comprising:
a plurality of insulating units, each of said plurality of insulating units comprising a first layer of insulating material and a second layer of insulating material, at least one of said first and second layers comprising a polymeric material, said insulating units positioned with respect to each other such that said second layer of one insulating unit is adjacent to said first layer of another insulating unit; and
oil in contact with said polymeric material.
10. The device of claim 9, wherein said polymeric material is selected from the group consisting of: polyethylene terephthalate (PET), surface treated polyethylene terephthalate (S-PET), QUIN-T, QUIN-TEK, polypropylene, polyethylene, polyethylene naphthalate (PEN), polysulphones, polystyrene, polyimides, polyphenylene sulphide (PPS), polybutylene terephthalate (PBT), polyamide imide (PAI), polyether imide (PEI) and any combinations thereof.
11. The device of claim 9, wherein said first layer and said second layer each have a thickness from about 0.5 mil to about 20 mil.
12. The device of claim 9, wherein said first layer has a first thickness and said second layer has a second thickness, a ratio of said second thickness to said first thickness is from about 0.75:1.25 to about 1.25:0.75.
13. The device of claim 9, wherein said plurality of insulating units forms a insulation system selected from the group consisting of main insulation, layer insulation, and any combinations thereof.

14. The device of claim 9, wherein said first layer comprises a paper insulating material, and wherein said second layer comprises a polymeric material.

15. The device of claim 14, wherein said plurality of insulating units is formed of a winding of said first and second layers.

16. The device of claim 9, wherein said plurality of insulating units terminates at a terminal layer, said terminal layer having thereon a third layer of a paper insulating material.

17. An oil filled transformer comprising:

a main insulation which comprises:

a plurality of insulating units, each of said plurality of insulating units comprising a first layer of insulating material and a second layer of insulating material;

at least one of said first and second layers comprising a polymeric material, said insulating units positioned with respect to each other such that said second layer of one insulating unit is adjacent to said first layer of another insulating unit.

18. The transformer of claim 17, wherein said first layer and said second layer each have a thickness from about 0.5 mil to about 20 mil.

19. The transformer of claim 17, wherein said first layer has a first thickness and said second layer has a second thickness, a ratio of said second thickness to said first thickness is from about 0.75:1.25 to about 1.25:0.75.

20. The transformer of claim 17, wherein said first layer comprises a paper insulating material, and wherein said second layer comprises a polymeric material.

21. The transformer of claim 20, wherein said plurality of insulating units terminates at a terminal layer, said terminal layer having thereon a third layer of a paper insulating material.

22. The transformer of claim 21, wherein said plurality of insulating units is formed of a winding of said first and second layers.
23. The transformer of claim 21, wherein said polymeric material is selected from the group consisting of: polyethylene terephthalate (PET), surface treated polyethylene terephthalate (S-PET), QUIN-T, QUIN-TEK, polypropylene, polyethylene, polyethylene naphthalate (PEN), polysulphones, polystyrene, polyimides, polyphenylene sulphide (PPS), polybutylene terephthalate (PBT), polyamide imide (PAI), polyether imide (PEI) and any combinations thereof.
24. The transformer of claim 23, wherein said first layer and said second layer each have a thickness from about 0.5 mil to about 10 mil.
25. The transformer of claim 24, wherein said first layer has a first thickness and said second layer has a second thickness, a ratio of said second thickness to said first thickness is from about 0.75:1.25 to about 1.25:0.75.
26. The transformer of claim 21, wherein said insulating system comprises 7 insulating units, and wherein said first layer has a thickness of about 5 mil, said second layer has a thickness of about 3 mil, and said third layer has a thickness of about 5 mil.
27. The transformer of claim 21, wherein said insulating system comprises 5 insulating units, and wherein said first layer has a thickness of about 5 mil, said second layer has a thickness of about 5 mil, and said third layer has a thickness of about 5 mil.
28. The transformer of claim 17, wherein said polymeric material is in contact with a transformer oil.

29. An insulation system for an oil filled environment comprising:
a first layer of polymeric insulating material,
said insulation system being an insulation selected from the group consisting of layer insulation, main insulation, spacer insulation, end rings and any combinations thereof.
30. The system of claim 29, wherein said polymeric insulating material is selected from the group consisting of: polyethylene terephthalate (PET), surface treated polyethylene terephthalate (S-PET), QUIN-T, QUIN-TEK, polypropylene, polyethylene, polyethylene naphthalate (PEN), polysulphones, polystyrene, polyimides, polyphenylene sulphide (PPS), polybutylene terephthalate (PBT), polyamide imide (PAI), polyether imide (PEI) and any combinations thereof.
31. The system of claim 29, wherein said first layer has a thickness from about 1 mil to about 20 mil.
32. The system of claim 39, wherein said insulation system is layer insulation.
33. An insulation system for an oil filled environment comprising:
a plurality of layers of insulating material, at least two of said plurality of layers comprising a polymeric material.
34. The system of claim 33, wherein said polymeric material is selected from the group consisting of: polyethylene terephthalate (PET), surface treated polyethylene terephthalate (S-PET), QUIN-T, QUIN-TEK, polypropylene, polyethylene, polyethylene naphthalate (PEN), polysulphones, polystyrene, polyimides, polyphenylene sulphide (PPS), polybutylene terephthalate (PBT), polyamide imide (PAI), polyether imide (PEI) and any combinations thereof.
35. The system of claim 33, wherein each of said plurality of layers of insulating material has a thickness from about 0.5 mil to about 20 mil.

36. The system of claim 33, wherein said plurality of layers of insulating material comprise alternating layers of said polymeric material and a paper insulating material.